



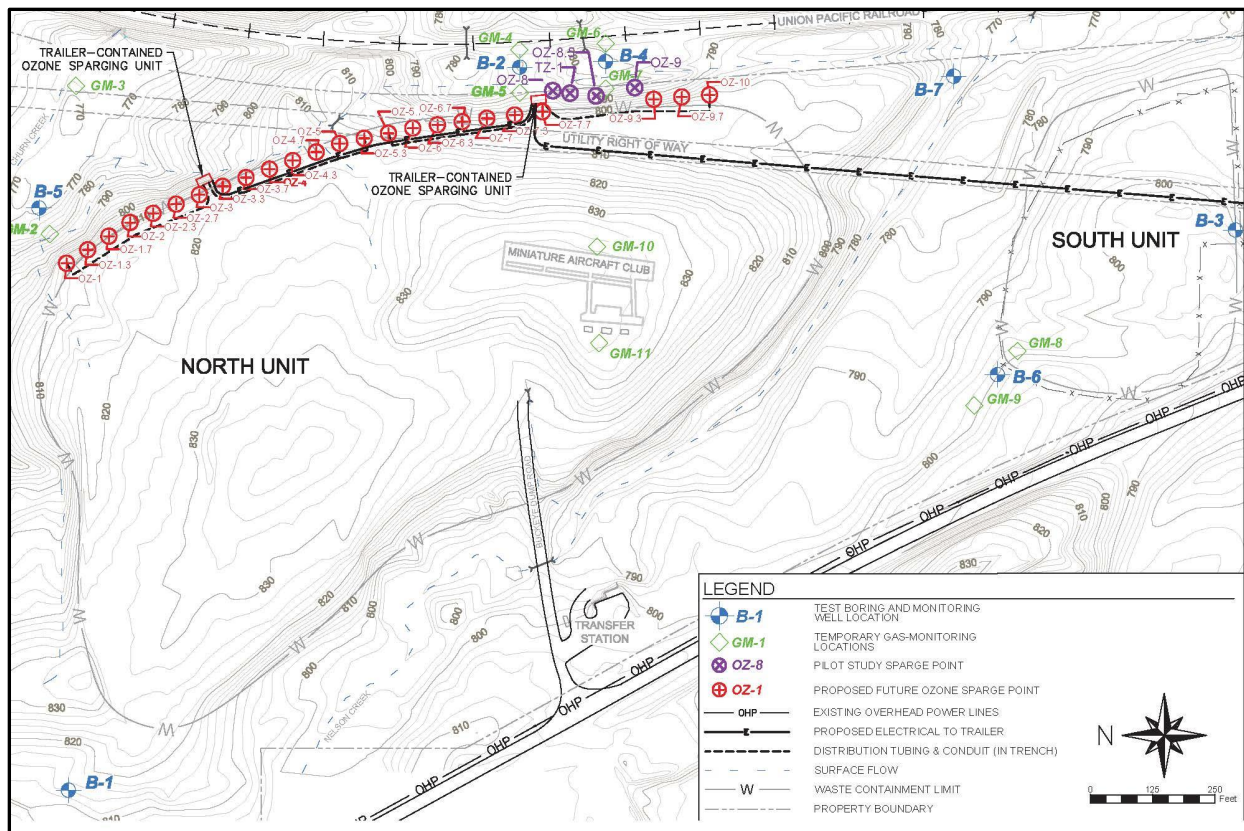
Groundwater Remediation Pilot Study, Buckeye Landfill Shasta Lake, Shasta County Fact Sheet, February 2021

The Central Valley Regional Water Quality Control Board (Central Valley Water Board) is providing this Fact Sheet to parties interested in site cleanup at the Buckeye Landfill, Lake Boulevard, Shasta Lake, California (Site). Shasta County Department of Public Works proposes a three-month ozone injection pilot study into groundwater underlying the Site under General Order R5-2015-0012. This Fact Sheet summarizes site investigation and cleanup to date and the proposed activities.

Background

The Site is a closed landfill owned and operated by Shasta County Department of Public Works (Discharger). The waste disposal operation was first established in the 1940s as a burn dump and operated for approximately 20 years before the Site was converted to a sanitary landfill in 1973. The Site was a trench and fill operation and accepted municipal solid waste (MSW) until 1982 when the Site was closed. The Site's two solid waste management units (WMUs), referred to as the North and South Units, are unlined, as their construction predates the regulatory requirements set forth under California Code of Regulations, title 27 (Title 27), section 20080(d). Final closure operations began in 1982 when the WMUs were covered with three feet (approximately 200,000 cubic yards) of locally obtained, compacted, low-permeability soil as final cover. In 2002, the South Unit was covered with a geotextile and geomembrane layer overlain by vegetative-layer soils, and was equipped with cover penetrating landfill-gas vents. In 2014, further improvements to both the North and South Units including construction of drainage channels to minimize erosion and repairs to damaged areas of the final covers.

Beginning in 2011, volatile organic compounds (VOCs) including tert-butyl alcohol (TBA) and 1,4 dioxane began to be detected in groundwater underlying the North Unit and South Unit. In 2017 Central Valley Water Board staff directed the Discharger to submit a groundwater study report to identify VOC sources. The September 2017 Groundwater Study Report investigated several possible sources including leachate, landfill gas, contaminants within well casings, and non-landfill related activities. The Report indicated that high concentrations of methane and TBA were detected in soil gas overlying both the North Unit and South Unit. Central Valley Water Board staff directed the Discharger to propose a cleanup method. The Discharger's engineering feasibility study proposes ozone injection into groundwater as the remedial approach. The feasibility of cleanup using ozone injection is to be established via a pilot study.



Site Layout and Monitoring and Injection Points

What work has been completed?

The Discharger has contracted Lawrence and Associates (L&A) to perform the pilot study. In August 2018, the Discharger initiated the first phase of the pilot study which involved air pressure testing to monitor the pressure response in monitoring points located at varying distances from the injection points. The first phase of the pilot study confirmed the feasibility of implementing ozone sparging. Following the installation of a power line to supply power to the ozone treatment area, the Discharger submitted the General Order permitting package.

What are the next steps?

L&A has proposed a three month trial period of ozone injection into three of four injection points to collect data regarding preferential flow paths in the underlying geology, while existing monitoring wells and the fourth injection point will be used to monitor the treatment zone. A trailer mounted ozone remediation system will be placed onsite and will be set to deliver ozone at a rate of 26 grams/day at a concentration of six-percent by volume and at a pressure of 25 pounds per square inch. Ozone sparging will utilize polytetrafluoroethylene (PTFE) delivery tubing.

Monitoring and reporting during the pilot test study be conducted in accordance with the Monitoring and Reporting Program (MRP) R5-2015-0012-XXXX. Constituents of concern (COCs) including VOCs (including TBA and 1,4 dioxane), methane, dissolved ferrous iron and chromium VI will be assessed in monitoring wells prior to ozone injection. Subsequently, COCs will be sampled and analyzed on a monthly basis. Groundwater parameters including groundwater elevation, oxidation reduction potential,

electrical conductivity, dissolved oxygen, pH and temperature will be assessed in monitoring wells prior to ozone injection. Subsequently, these parameters will be sampled and analyzed on a weekly basis. Additionally, the Discharger will monitor the discharge of ozone into groundwater daily.

The NOI submitted as part of the application package, included a contingency plan, which states that if parameters of interest show a sustained significant increase over background values, or if additional water quality objectives are exceeded, the pilot study will be terminated and other treatment options will be explored.

For more information:

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To review project documents, please call (530) 224-4845 to make an appointment or visit [GeoTracker](http://geotracker.waterboards.ca.gov) at: (<http://geotracker.waterboards.ca.gov>).